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## Thyroid Nodules: Updates in Testing, Diagnosis and Treatment

The advent of numerous imaging techniques, including neck CT, MRI, ultrasound, and carotid Doppler, has led to an increase in the incidental discover of subclinical thyroid nodules that were previously undetectable on physical examination. Thyroid nodules are quite common (women:men - 3:1) and the incidence increases with age: 20-30% of younger women, and as many as 60% of older women may have at least one thyroid nodule present on imaging studies.

The risk of a thyroid nodule containing cancer is about 5-15%, depending on age, gender, family history, or a history of neck irradiation. Size and number of nodules do not seem to influence the risk of thyroid cancer in any single nodule, although other sonographic features, such as irregular borders or microcalcifications, can increase the risk of a nodule being malignant.

Initial evaluation of thyroid nodule(s) should include measurement of serum TSH to determine whether a patient is hyperthyroid. A suppressed TSH usually indicates hyperthyroidism, which may be associated with an elevated Free T4 and/or Free T3. There are several causes of hyperthyroidism including toxic diffuse goiter, toxic multinodular or uninodular goiter or thyroiditis. Further thyroid nodule testing may include thyroid antibody tests and nuclear medicine thyroid uptake and scans.

If a patient has a thyroid nodule and a normal or elevated TSH, then an ultrasound guided Fine Needle Aspiration (FNA) biopsy, which is more cost-effective and specific than nuclear medicine scans, should be considered to see whether there is any evidence of malignancy. Thyroid nodules greater than 1cm to 1.5cm in size should be considered for FNA biopsy, whereas smaller nodules may be watched or biopsied depending on sonographic features.

At Carolina Endocrine, we specialize in comprehensive evaluation and treatment for thyroid patients. We evaluate and treat a variety of thyroid disorders including:

- Thyroid nodules and cysts
- Hypothyroidism
- Hyperthyroidism
- Thyroid cancer
- Thyroid dysfunction during/after Pregnancy

During the initial visit, Carolina Endocrine's Complete Thyroid Care program provides patients with an exam, thyroid ultrasound and ultrasound guided FNA biopsy in the office which generally takes around 10 to 15 minutes. Additionally, we perform microscopic examination of the slides to assess for adequate sampling which has minimized our rates of nondiagnostic results. We also perform aspiration of thyroid cysts. If necessary, radioactive iodine uptake and radioiodine treatment can be performed in office on our hyperthyroid and thyroid cancer patients.

Expertise in neck ultrasound has also helped in our evaluation of hyperparathyroid patients. Pre-operatively probable parathyroid adenoma can be identified on neck ultrasound, complementing evaluation of hyperparathyroidism prior to performing sestamibi scans or surgery.

### State-of-the-Art Thyroid Care at Carolina Endocrine

*Carolina Endocrine is the only private practice in the Raleigh area that offers comprehensive, state-of-the-art testing and treatment of thyroid nodules – all on site.*

#### Comprehensive First Visit for Patient Convenience:

- History/Physical Exam
- Ultrasound
- FNA Biopsy
- On-site microscopy review for specimen adequacy before cytopathology analysis

#### State-of-the-Art Testing Exclusive to Carolina Endocrine\*:

- Thyroid FNA Analysis by Veracyte® (Afirma)
- Thyroid FNA Analysis by Asuragen® (miRInform)

#### General Diagnostic & Treatment Options:

- Radioactive Iodine Uptake and I-131 Treatment (if indicated)
- Anti-Thyroid Medications
- Thyroid Hormone Replacement/Suppressive Therapy
- Evaluation of pre/post-operative diagnosis & treatment

*\*Testing indicated only if cytopathology results are inconclusive. Course of testing and treatment may vary with patient.*

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At Carolina Endocrine, experience and technology combine to offer highly specialized care in nondiabetes adult and pediatric endocrinology. We provide care for an array of thyroid, parathyroid, adrenal, pituitary, metabolic, reproductive, puberty and growth disorders through diagnostic and therapeutic modalities, most of which are available on site. Carolina Endocrine is proud to offer quality, convenient care to both children and adults.